

EUPHORBIA ARUNDELANA, AN ALLY OF EUPHORBIA  
IPECACUANHAE.

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DR. MILLSPAUGH has said that "the singular and extremely amorphous" *Euphorbia Ipecacuanhae* "represents in itself seven 'Rafinesquian species,' so greatly does it vary in form, color, inflorescence and leaf." No one who has seen the plant in nature will dispute the statement. The leaves vary from linear to broadly ovate, and between two plants of the same leaf shape, growing in the same square foot of soil, there is often a difference of several hundred percent in the size of the leaves. Some plants are entirely purple, some pale green, in others the purple pigment is definitely localized in certain organs. A colony of *Euphorbia Ipecacuanhae* consists of a host of forms, different enough from one another so that they can be assembled into groups of like individuals. De Vries<sup>1</sup> believes that the species is in a mutable condition.

In the western part of Anne Arundel County, Maryland, there is a close ally of *Euphorbia Ipecacuanhae*, seemingly undescribed, which may be called *Euphorbia arundelana*. Both species grow together in a small area (equidistant from the bridges which cross the Patuxent River to Laurel and Bowie, Prince George's County) designated as "Sassafras fine sandy loam"<sup>2</sup> on the U. S. Soil Survey sheet of Anne Arundel County.

The essential and striking character of *Euphorbia arundelana* is

<sup>1</sup> "Herr Dr. J. W. Harshberger sandte mir Material von *Hibiscus Moscheutos* und *Euphorbia Ipecacuanha* aus Pennsylvania, welches durch den auffallenden Reichthum an Formen auf eine Mutationsperiode für diesen Arten schliessen lässt." De Vries, Die Mutationstheorie, II, p. 664.

<sup>2</sup> This soil type is a brownish or deep yellow sandy loam, heavy at the surface, but lighter in color and texture as the depth increases. "At 26 to 30 inches it passes into a sand or loamy sand varying in color from a light yellow to a reddish brown. . . . The loose open character of the subsoil allows excessive moisture to pass readily through it, while at the same time the texture of the soil gives it a good water-holding capacity. . . . The material composing the soil is a marine sediment washed down from the higher lands farther north. . . . The particles are sharp and angular, indicating that the soil has not been water-worn to a great extent. . . . The Sassafras fine sandy loam occurs principally in the southern and western parts of the country. . . . It is found at elevations ranging from 40 to 150 feet above tide." J. C. Britton and C. R. Zappone, Soil Survey of Anne Arundel County, Maryland. (Advance Sheets — Field Operations of the U. S. Bureau of Soils, 1909.)

the presence of broad white appendages, often tinged with pink, on the involucre glands. *E. Ipecacuanhae* has often been described as having exappendiculate glands, but Norton<sup>1</sup> has pointed out that a

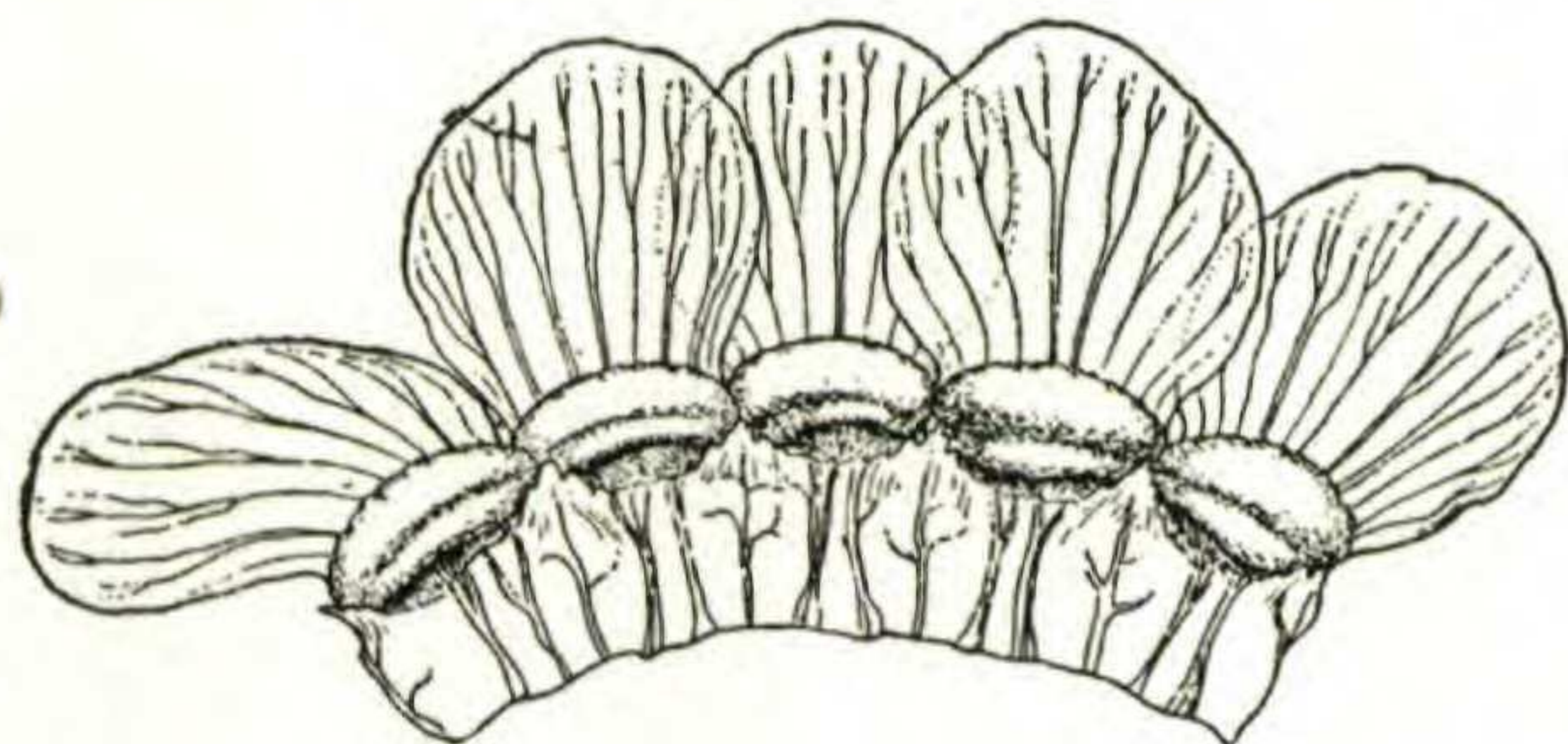


Fig. 1. *Euphorbia arundelana*. Expanded involucre showing broad appendages. ( $\times 5$ )

narrow green appendage is always present. Partly on this ground he excluded the species from the subgenus *Tithymalus*. Dr. Small<sup>2</sup> transferred it to *Tithymalopsis*, and the discovery of *E. arundelana* shows that its affinity is really with the members of this group. In *E. Ipecacuanhae* the appendage is so inconspicuous as to be easily overlooked, in *E. arundelana*, on the other hand, it is quite as conspicuous as in the familiar *E. corollata*. (Compare the text figures.) The range of variation seems to be as great in *E. arundelana* as in *E. Ipecacuanhae*, but the two series of forms present the following contrasting characters. 1) Some forms of *E. arundelana* (not all) are pubescent. In Anne Arundel County there seem to be no pubescent forms of *E. Ipecacuanhae*, nor are there any pubescent specimens of it in the National Herbarium. The presence of pubescence is therefore diagnostic; its absence is not. 2) In the forms of *E. arundelana* the stems are prevalently of strict, upright habit, whereas those of *E. Ipecacuanhae* tend to be spreading or decumbent. In other characters the two species are strikingly alike. It is especially noteworthy that the finger-thick, deep, vertical roots are indistinguishable.

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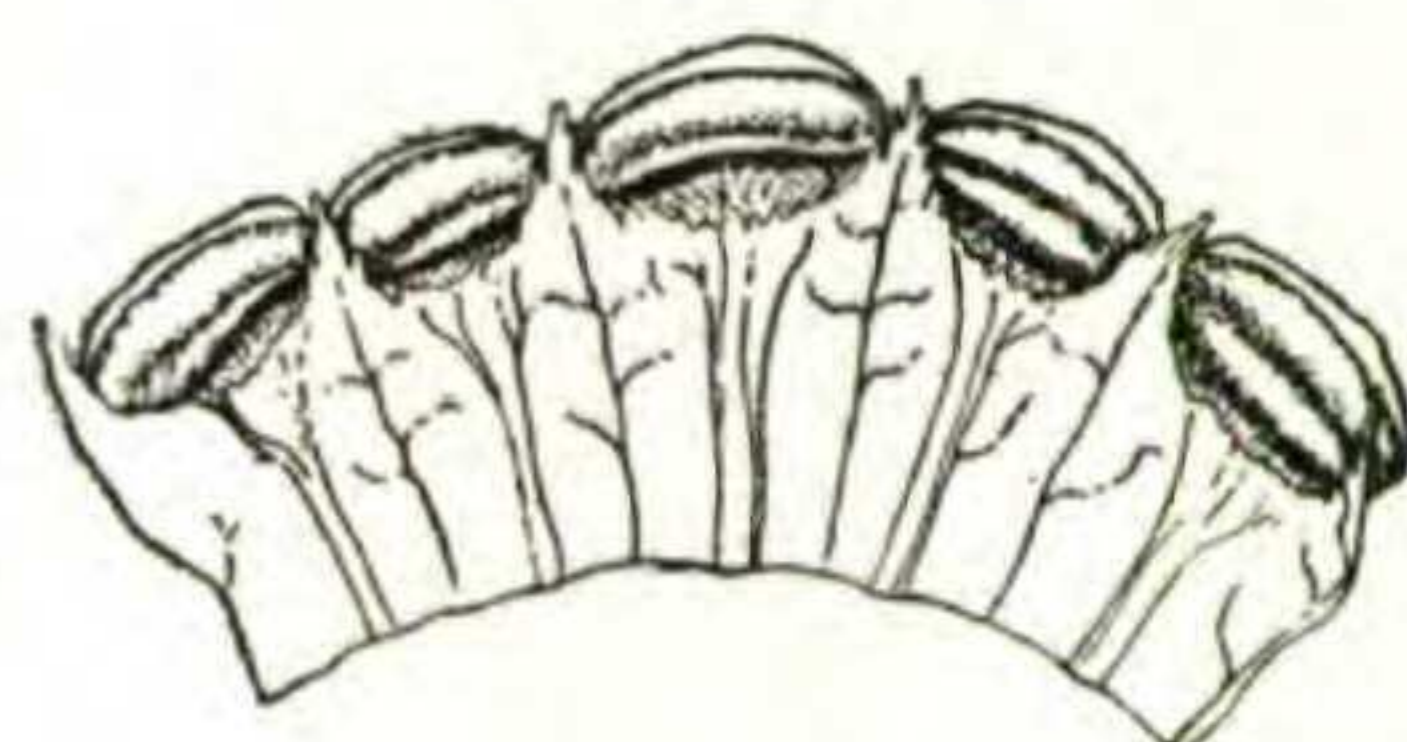


Fig. 2. *Euphorbia Ipecacuanhae*. Expanded involucre showing very narrow appendages. ( $\times 5$ )

***Euphorbia arundelana*** sp. nov. Herba perennis habitu *Euphorbiae Ipecacuanhae* simillima. Radix perpendicularis longissima crassitudine circa 1 cm., caulibus subterraneis multiramibus plus minusve tortuosis coronata. Caules plures floriferi annui, altissimi

<sup>1</sup> J. B. S. Norton, Report Mo. Bot. Gard. XI (1900), p. 86.

<sup>2</sup> J. K. Small, Flora Southeastern U. S., p. 1334.

2 dm. attingentes, deorsum alternatim, sursum dichotome vel trichotome ramosi. Folia inferiora squamiformia alterna, superiora verticillata vel saepius opposita, summis exceptis quam internodia multum breviora, amplitudine formaque valde varia, lanceolata vel ovata, mediocria circa 2 cm. longa, sessilia vel brevissime petiolata. Pedunculi erecti in dichotomiis (aut trichotomiis) terminales, quique involucrum unum ferentes, infimi usque ad 7 cm. longi internodia aequantes, summi foliis breviores. Involucrum hemisphaericum glandulis appendice lata patenti conspicua circumdatis.

*forma a* omnino glabra, foliis caulibusque viridibus; involucri glandulis albo-appendiculatis.

*forma β* omnino glabra, foliis caulibusque purpureis; involucri glandulis roseo-appendiculatis.

*forma γ* caulibus, praecipue nodis, foliisque pilosis deinde glabratis, purpureis; pedunculis glabris, involucri extus circulatim ad segmentorum baseis pubescentibus, alibi glabris; glandulis albo-appendiculatis.

In fine sand, southeast of Laurel, Maryland, in Anne Arundel County, 1 May, 1910, Bartlett 1954 (form *a*), 1955 (f. *β*), and 1956 (f. *γ*). The three forms which are defined illustrate the types of variation shown by this species. Other forms are represented by Bartlett 1952 and 1953; many more might have been collected.

Since the soil in which *Euphorbia arundelana* grows is agriculturally the best in the region, its native flora is but poorly preserved. The Euphorbias occur in fence corners and in the narrow strips of undisturbed sand between roads and farm fences.

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